

## **REMARKS**

The Office Action dated April 19, 2007, has been carefully considered. In response thereto, the present paper is being submitted. In view of this paper and, in particular, the remarks presented below, it is believed that the application is in condition for allowance. Accordingly, reconsideration and withdrawal of the outstanding rejections and objections to the claims and specification, and issuance a Notice of Allowance, are respectfully requested.

### **Summary of the Office Action**

The specification has been objected to because the term “intermettalic alloys” needs to be changed to “intermetallic alloys.”

Claims 13-20 are pending in the application. Claims 14, 15, and 19 have been objected to because not all of the variables appearing in the equations recited in claims 14 and 15 have been defined, and the term “intermettalic alloys” in claim 19 needs to be changed to “intermetallic alloys.”

Claims 13-20 have been rejected under 35 U.S.C. § 112, second paragraph, because the term “approximately” in claim 13 (from which claims 14-20 depend) is a relative term that is not, according to the Examiner, adequately described in the claims or specification.

Claim 19 has been rejected under 35 U.S.C. § 112, second paragraph, as being indefinite because, according to the Examiner, the term “tool alloys” is not clear.

Claims 13, 17, 18, and 20 have been rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 4,117,832 to *Lupkas*.

Claims 13, 18, and 20 have been rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 4,041,524 to *Trunk*.

Claims 13, 17, and 20 have been rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 4,369,838 to *Asanuma et al.*

Claims 13, 17, 19, and 20 have been rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 4,838,347 to *Dentini et al.*

Finally, claims 14 and 15 have been rejected under 35 U.S.C. § 103(a) as being obvious over the *Dentini et al.* patent.

The following remarks are intended to address those objections and rejection.

### **Objection to the Specification**

As noted above, the specification has been objected to because the term “intermettalic alloys” needs to be changed to “intermetallic alloys.” Included herewith is an instruction to replace the paragraph of the specification containing the misspelled “intermettalic alloys” and replace it with the correct spelling suggested by the Examiner. Reconsideration and withdrawal of the objection to the specification are respectfully requested.

### **Objection to the Claims**

Claims 14, 15, and 19 have been objected to because not all of the variables appearing in the equations recited in claims 14 and 15 have been defined, and the term “intermettalic alloys” in claim 19 needs to be changed to “intermetallic alloys.”

With regard to claims 14 and 15, it is not believed that the variables set forth in the claims are required to be defined in the claims themselves, because the variables are already clearly defined in the specification. In re Zletz, 893 F.2d 319, 13 U.S.P.Q.2d 1320 (Fed. Cir. 1989) (noting that when the specification states the meaning that a term in the claim is intended to have, the claim is examined using that meaning, in order to achieve a complete exploration of the applicant’s invention and its relation to the prior art). However, while not conceding that the claims need to be amended for patentability reasons to overcome this objection, Applicants have amended claim 13, from which claims 14 and 15 depend, to incorporate the variable definitions set forth in the specification in order to advance the application toward allowance.

With regard to claim 19, the claim has been amended, as shown in the listing of claims, to correct the recite “intermetallic alloys.”

Reconsideration and withdrawal of the objection to the claims are respectfully requested.

**Rejection of the Claims Under 35 U.S.C. § 112, Second Paragraph**

**A. Claims 13-20**

Claims 13-20 have been rejected under 35 U.S.C. § 112, second paragraph, because the term “approximately” in claim 13 (from which claims 14-20 depend) is a relative term that is not, according to the Examiner, adequately described in the claims or specification and, therefore, renders the claims indefinite. For the following reasons, the Applicants respectfully traverse the Examiner’s rejection.

Claims are not automatically or presumptively indefinite under 35 U.S.C. 112, second paragraph, simply because they recite terms of degree, such as “approximately.” See Seattle Box Co., v. Industrial Crating & Packing, Inc., 731 F.2d 818, 221 U.S.P.Q 568 (Fed. Cir. 1984). The acceptability of terms of degree depends on whether one of ordinary skill in the art would understand what is claimed in light of the specification. Id. According to the M.P.E.P. “[w]hen a term of degree is presented in a claim, first a determination is to be made as to whether the specification provides some standard for measuring that degree. If it does not, a determination is made as to whether one of ordinary skill in the art, in view of the prior art and the status of the art, would be nevertheless reasonably apprised of the scope of the invention.” M.P.E.P. § 2173.05(b).

In this case, the specification discloses a specific shape for the claimed fin invention by defining it mathematically (e.g., claims 14 and 15; FIG. 6). That shape is then compared in the specification to the prior art fin shapes (see FIGS. 1-4), of which one is known as the most efficient prior art fin shape: “The fin of the present invention is shorter and has a larger semi-height at the base than the corresponding convex-parabolic-shaped fin. The volume of the present fin is from six to eight times smaller than the volume of the corresponding convex-parabolic-shaped fin.” The specification also teaches that the claimed fin shape is more efficient at transferring heat from a source to a surrounding fluid than the prior art fins. Thus, the specification defines both the structural and performance differences between the claimed fin shape and the prior art. Those two parameters—shape and function (which are both recited in the claims)—provide two separate standards from which one of ordinary skill in the art can

compare the claimed invention with the prior art to ascertain the full scope of protection that the Applicants are entitled to. That is, it is the prior art that limits the scope of the claimed invention. Because one of ordinary skill in the art can easily test the shapes and performances of other fins and compare them to the claimed fin and the prior art fins, the claims are not indefinite. Accordingly, reconsideration and withdrawal of the rejection of the claims under 35 U.S.C. § 112, second paragraph, are respectfully requested.

Applicants submit that the above arguments are not a disclaimer or disavowal of any scope of protection for the claimed fin shape and performance. Applicants are entitled to more than just the precise mathematically defined shape for the sides of the fin recited in the dependent claims.

**B. Claim 19**

With regard to claim 19, the Examiner contends that the claim is indefinite because it is not clear which materials fall within the term “tool alloys.” Applicants respectfully traverse the Examiner’s rejection. It appears that the Examiner is contending that “tool alloys” would not be understood by those skilled in the art, but there is no supporting evidence for that contention. In fact, the term “tool alloys” is well known to those of ordinary skill in the art as covering certain known metallic materials. A search of the Internet reveals that the term is widely used. Because the term is capable of being interpreted by those skilled in the art, the term cannot be indefinite.

Accordingly, reconsideration and withdrawal of the rejection of claims 13-20 under 35 U.S.C. § 112, second paragraph, are respectfully requested.

**Rejection of the Claims Under 35 U.S.C. § 102(b)**

Claims 13, 17, 18, and 20 have been rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 4,117,832 to *Lupkas*. Claims 13, 18, and 20 have been rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 4,041,524 to *Trunk*. Claims 13, 17, and 20 have been rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 4,369,838 to *Asanuma et al.* Finally, claims 13, 17, 19, and 20 have been rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 4,838,347 to *Dentini et al.* Applicants respectfully traverse those rejections because none of those references disclose or suggest using a

heat dissipating fin having a length,  $L$ , as recited in amended claim 13. Accordingly, reconsideration and withdrawal of the rejection of the claims under 35 U.S.C. § 102(b) are respectfully requested.

**Rejection of the Claims Under 35 U.S.C. § 103(a)**

Claims 14 and 15 have been rejected under 35 U.S.C. § 103(a) as being obvious over the *Dentini et al.* patent. In particular, the Examiner contends that the *Dentini et al.* patent discloses every feature of the claimed invention except that it fails to disclose the particular spatial relationships of the elements of the fin as recited in claims 14 and 15. However, the Examiner contends that the mere optimization of the shape and the relative sizes of various elements of a given inventive structure (i.e., *Dentini et al.* patent) does not render the structure patentable and is instead an obvious matter of design choice. Applicants respectfully traverse the Examiner's rejection for the following reasons.

First, the *Dentini et al.* patent does not disclose or suggest using a heat dissipating fin having a length,  $L$ , as recited to amended claim 13. In fact, the *Dentini et al.* patent is silent about the particular length (i.e., the height at the tip) of the fin.

Second, § 103(a) states that “patentability shall not be negated by the manner in which the invention was made.” Thus, the Examiner's basis for rejecting the structural features of the fin recited in claims 13 and 14 because they were developed through “mere optimization” is improper. 35 U.S.C.A. § 103(a) (historical and revision notes) (“it is immaterial whether [the invention] resulted from long toil and experimentation or from a flash of genius.”).

Regardless of how the fin shapes were developed, patentable weight must be given to the mathematical descriptions for the fin shape recited in the claims. 35 U.S.C. § 112, second paragraph (“The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.”)

Since the *Dentini et al.* patent does not disclose or suggest the mathematical equations set forth in claims 14 and 15, or disclose or suggest using the mathematical optimization process to make the fins according to claims 14 and 15, there is no reason to suggest that a person of

ordinary skill in the art at the time of the invention would have wanted to modify the invention disclosed in the *Dentini et al.* patent to arrive at the invention of claims 14 and 15.

Accordingly, it is respectfully submitted that the Examiner has not established a *prime facie* case of obviousness with regard to claims 14 and 15. Reconsideration and withdrawal of the rejection of those claims under 35 U.S.C. § 103(a) are respectfully requested.

### **New Claims**

Claims 23-29 are new. Applicants submit that no new matter is being introduced. The new claims are being added to better protect the disclosed invention and are not being added in response to any rejection or objection of the pending claims. Entry of the new claims in the record is respectfully requested.